

### **Abstract**

Human and mammalian skin undergoes a variety of changes associated with chronological aging. Various environmental factors, disease states and genetic disorders may accelerate both the appearance of aging skin and also the structural and functional changes associated with aging skin. Ultraviolet radiation from the sun is one of the classic known and well-defined means of accelerating or worsening the aging of the skin and this is frequently termed photoaging. Other environmental factors, such as oxidative stress, free radicals, environmental toxins such as ozone and cultural customs or habits such as tobacco smoking are other known probe accelerators in photo aging skin. A wide variety of other factors known and unknown contribute to accelerated or premature aging of the skin. This invention discusses methods where electromagnetic radiation, in particular, light, can be used to photobiomodulate the activity of living cells to delay, diminish, retard or even reverse the structural and functional effects of aging of the skin and other living cells and tissues. In particular methods described for improving the appearance, structure, function of aging skin, including up and down regulating the genotypic markers for the phenotype of aging skin.